

### **Amendments to the Claims:**

This listing of claims will replace all prior versions and listing of claims in the application:

Listing of Claims:

Claims 1-24 (canceled)

25. (New) A device for measuring transient magnetic performance of a magnetic component, the device comprising

a flux path closure device coupled to the magnetic component to define a closed flux path through the flux path closure device and the magnetic component,

an excitation coil responsive to a transient excitation signal to generate a transient magnetic flux in the closed flux path, and

a monitoring device configured to monitor a voltage across, and a current through, the excitation coil resulting from application of the transient excitation signal thereto, the monitoring device configured to compute an effective resistance of the excitation coil as a function of the voltage and the current, and to compute the transient magnetic flux as a function of the voltage, the current and the effective resistance.

26. (New) The device of claim 25 wherein the monitoring device is configured to compute an integrated voltage as an integral of a number of voltage values measured across the excitation coil over a duration of the transient excitation signal and to

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compute an integrated current as an integral of a number of current values measured through the excitation coil over the duration of the transient excitation signal,

and wherein the monitoring device is configured to compute the effective resistance of the excitation coil as a ratio of the integrated voltage and the integrated current.

27. (New) The device of claim 25 wherein the monitoring device is configured to compute the transient magnetic flux as a function of the voltage, the current and a number of turns in the excitation coil.

28. (New) The device of claim 27 wherein the monitoring device is configured to compute the transient magnetic flux as a ratio of an integral of a function over time and the number of turns of the excitation coil, the function being a difference between the voltage and a product of the current and the effective resistance of the excitation coil.

29. (New) The device of claim 25 wherein the magnetic component defines a cavity therein sized to receive the excitation coil therein.

30. (New) The device of claim 25 wherein the flux path closure device defines a cavity therein sized to receive the excitation coil therein.

31. (New) The device of claim 25 wherein the flux path closure device is fabricated from a material that suppresses eddy current therein.

32. (New) The device of claim 31 wherein the flux path closure device is fabricated from oxide-coated, pressed metal particles.

33. (New) The device of claim 32 wherein the metal particles are iron particles.

34. (New) The device of claim 31 wherein the flux path closure device is fabricated from laminated layers of iron.

35. (New) The device of claim 25 further including a spacer positioned between the flux path closure device and the magnetic component with the closed flux path extending therethrough.

36. (New) The device of claim 35 wherein the spacer is formed of a non-magnetic material.

37. (New) The device of claim 35 wherein the spacer is formed of an electrically non-conductive material.

38. (New) The device of claim 25 further including a signal source configured to produce the transient excitation signal.

39. (New) The device of claim 38 wherein the signal source is a current source, and wherein the transient excitation signal is a transient current signal.

40. (New) The device of claim 38 wherein the signal source is a voltage source, and wherein the transient excitation signal is a transient voltage signal.

41. (New) The device of claim 25 wherein the monitoring device includes means for monitoring the voltage across the excitation coil.

42. (New) The device of claim 25 wherein the monitoring device includes means for monitoring the current through the excitation coil.

43. (New) The device of claim 25 further including a graphing system configured to plot the transient magnetic flux as flux linkage vs. time.

44. (New) The device of claim 25 further including a graphing system configured to plot the transient magnetic flux as flux linkage vs. current.

45. (New) The device of claim 25 further including a flux coil separate from the excitation coil,

wherein the monitoring device is configured to monitor a voltage across the flux coil and compute the transient magnetic flux as a function of the voltage across the flux coil and a number of turns in the flux coil.